

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Glyphosate Intermediate (GI) Unit
Monsanto Company, Louisiana
Luling, St. Charles Parish, Louisiana
Agency Interest Number: 1096
Activity Number: PER20030007
Draft Permit 2574-V4**

I. APPLICANT:

Company:

Monsanto Company
P.O. Box 174
Luling, LA 70070

Facility:

Glyphosate Intermediate (GI) Unit
12501 River Road, Luling, Louisiana 70070
Between LA Hwy 18 (River Road) and U.S. Hwy 90 in St. Charles Parish,
Louisiana
Approximate UTM coordinates are 755.8 kilometers East and 3313.0 kilometers
North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Monsanto Company produces a variety of products at its Luling Facility with the major product being glyphosate, an active ingredient in Roundup®. Manufacturing units include: Disodium Iminodiacetate (DSIDA), Phosphorous Trichloride (PCl₃), Glyphosate Intermediate (GI), Glyphosate, Formulation and Packaging, Cyanuric Acid (CYA), and Chlorinated Cyanuric Acid (ACL). The Luling Plant also manufactured Acetaminophen until the year 2004 when its production was permanently shutdown.

Several Part 70 permits addressing portions of the facility have already been issued. These include:

Permit #	Units or Sources	Date Issued
2557-V0	DSIDA Unit	11/21/2006
2596-V1	PCl ₃ Unit	10/26/1999
2574-V3	GI Unit	11/26/2001
2517-V5	Glyphosate Plant	2/11/2002
2533-V3	CYA & ACL Units	07/31/2006
2567-V3	Steam Plant and Supporting Units	10/5/2005

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There are also three Part 70 permit renewal applications which have been submitted to the Louisiana Department of Environmental Quality (LDEQ) that are still undergoing the permit review process. These include:

Permit #	Units or Sources	Status
2557-V1	DSIDA Unit	Issued on 11/21/2006
2596-V2	PCl ₃ Unit	Public Notice on 11/2/2006
2517-V6	Glyphosate Plant and Formulation & Packaging Unit	Public Notice on 10/26/2006

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

Monsanto Company submitted a permit application and Emission Inventory Questionnaire (EIQ) received on December 4, 2003 requesting a Part 70 Permit Renewal / Modification. Additional information dated July 26, 2006, September 8, 2006, September 12, 2006 and November 1, 2006 was also received.

A notice requesting public comment on the proposed permit was published in *The Advocate*, Baton Rouge, Louisiana, on MONTH XX, 200X; and *The St. Charles Herald-Guide*, St. Charles, Louisiana, on MONTH XX, 200X. The public notice was sent to persons included in the Office of Environmental Services Public Notice Mailing List on MONTH XX, 2006. The proposed permit was also submitted to US EPA Region VI. All comments will be considered prior to the final permit decision.

Project description

The Glyphosate Intermediate (GI) Unit consists of fifteen production trains which produce glyphosate intermediate. The GI is produced by reacting disodium iminodiacetate (DSIDA) with phosphorous trichloride (PCl₃) and formalin (which is a mixture of formaldehyde and water). The process includes hydrolysis, PM reaction, crystallization, centrifugation, and drying operation (for GI trains A – D only).

Five thermal oxidation units are used to control the gas streams containing methyl chloride. Process scrubbers are used to control off gases from centrifuges, centrifuge feed tanks, wet cake screws, sumps, and formalin storage tanks, as well as off gases from the thermal oxidizers.

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The drying operations at the GI trains A – D are controlled by bag filters followed by process scrubbers. Dust from the dried product transfer and packaging operations are controlled by two baghouses.

In this permit Monsanto requested to include the following changes:

- Remove the following equipment which was previously permitted but never installed (Reactor Train P and associated equipment): Tank 1680 DSIDA Day Tank; Tank 1707 Centrifuge Feed Tank MP-1; Tank 1715 Centrifuge Feed Tank MP-2; Tank 1501 M-P HCl Storage Tank; Tank 1510 HCl Scrubber Feed Tank; Tank 673 M-P Bulk Loading Sump Tank; Tank 391 Reslurry Tank O; Tank 491 Reslurry Tank P; Tank 184 M-P Off-Spec Tank; Tank 1686 CT Slurry Storage Tank; Tank 1505 M Centrifuge Siphon Tank; Tank 1506 N Centrifuge Siphon Tank; Vessel 451 PM Reactor P; Vessel 461 Crystallizer P; Equipment 1473 Centrifuge MP-1; Equipment 1480 Centrifuge MP-2.
- Rename numerous equipment which were formerly identified as being associated Trains M-P to being associated with Trains M-O.
- Reconcile the following tanks: Renumber Reslurry Tank M to Tank 762, and Reslurry Tank N to Tank 772. Also both of these tanks volume changed to 5,000 gallons.
- Remove the MSIDA facility because it has been shut down and dismantled. Therefore the following equipment to be removed: Tank 2375 MSIDA Storage Tank; Tank 2376 MSIDA Storage Tank; Tank 2377 MSIDA Storage Tank; Tank 016 MSIDA Quench Tank; Vessel 101 MSIDA Reactor; (E.P) 1-99 MSIDA Cooling Tower.
- Remove the following sources with are no longer in operation: E.P. 1-97 GI Wet Cake Loading Scrubber; E.P. 30-98 E/F Recovered Catalyst Tank; E.P. 31-98 G/H Recovered Catalyst Tank.
- Incorporate the case-by-case insignificant activity submitted July 20, 2004 which changes the service of the existing E.P. 30-98 and E.P. 31-98 (E/ F and G/H Recovered Catalyst Tanks respectively) and provides new Emission Points: E.P. 7-06 CT Overheads Tank 1 and E.P. 8-06 CT Overheads Tank 2.
- Incorporate the case-by-case insignificant activity dated February 21, 2005 and February 24, 2005 which provided for two new Reslurry Tanks, Reslurry Tank C and Reslurry Tank D.
- Incorporate Monsanto's request to combine selected scrubber feeds to allow maintenance activities on certain scrubbers without shutting down the affected units. Specifically allow feed from Fume Scrubber A (E.P. 1-74) to Fume Scrubber B (E.P. 41-77) and vice versa. Also feed from the Formalin Tank Scrubber (E.P. 13-96) to either Fume Scrubber A (E.P. 1-74) or Fume Scrubber B (E.P. 41-77).
- Incorporate Letter of No Objection dated August 16, 2005 which allowed re-

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routing the vapor from three HCl storage tanks from Fume Scrubber A to Thermal Oxidizer 1.

- Incorporate Letter of No Objection dated April 19, 2005 which allowed the increase in size of the DSIDA Storage Tank No. 2 (E.P. 2-88) to 193,000 gallons.
- Reconcile HCl Surge Tank No. 1 (Tank No. 306) volume change from 800 gallons to 3000 gallons.
- Reconcile Bulk Centrifuge No. 1 (Equipment No. 710) change from 1,250 mm ID sized basket to 1,600 mm ID sized basket.
- Incorporate a unit-wide cap for rupture disk emissions. These rupture disk incidents were previously permitted under General Condition XVII prior to Title V permits. The rupture disks are installed on each GI Unit Reactor to protect the reactors from overpressure. Under normal conditions, any escaping vapors are routed to the scrubbers. However emission limitations cannot be met when a sudden surge of flow to the scrubbers results from the activation of a rupture disk. The rupture disks are vented to the scrubbers as follows: Trains A-D to E.P. 13-96; Trains E-F to E.P. 8-90; Trains G-H to E.P. 1-94; Trains I-L to E.P. 20-95; Trains M-O to E.P. 20-98. It is estimated that approximately 10 rupture disk activations occur per year.
- Reconcile biennially testing requirements for Thermal Oxidizers for concentrations of CO, NO_x, and Methyl Chloride. Monsanto has shown compliance for the last 10 years. Therefore, only performance testing in accordance with the requirements of the permit renewal will be required along with continued monitoring of combustion temperature and oxygen.

Permitted Air Emissions

Estimated changes in permitted emissions from the Glyphosate Plant and Formulation and Packaging Unit in tons per year are as follows:

Pollutant	Before	After	Change
PM ₁₀	25.89	25.49	-0.40
SO ₂	0.28	0.25	-0.03
NO _x	37.71	37.71	-
CO	25.37	25.37	-
HCl*	7.00	7.09	+0.09
Ammonia*	6.16	6.16	-
VOC	47.29	46.67	-0.62
Formaldehyde*	17.44	16.89	-0.55
Methanol*	7.13	7.13	-
Methyl Chloride*	7.85	8.43	+0.58
Other VOC	14.87	14.21	-0.66

* Chapter 51 regulated TAPs.

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Regulatory Analysis

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

Prevention of Significant Deterioration Applicability (PSD) and Non-attainment New Source Review (NNSR)

This application was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations, National Emission Standards for Hazardous Air Pollutants (NESHAP), and New Source Performance Standards (NSPS). Non-attainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD) do not apply.

MACT requirements

The Glyphosate Intermediate (GI) Unit is subject to the Maximum Achievable Control Technology (MACT) standards of 40 CFR 63 Subpart FFFF. The requirements that are applicable to each source in the application are detailed in the regulatory applicability tables.

Air Modeling Analysis

Louisiana Toxic Air Pollutant (LTAP) dispersion modeling is performed for the applicable LTAP compounds with emissions above the Minimum Emission Rate. The screening modeling results predict the maximum ground level concentrations of toxic air pollutants are below the Ambient Air Standards (AAS).

Impact on air quality from the emissions of the proposed units will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

Work Activity	Schedule	Emission Rates
		HCl (Ton/yr)
Remove Carbonate by reducing pH set-point to 3	120 hrs/yr for each scrubber (Fume Scrubbers A & B and Process Scrubbers E, G, I & M)	0.002

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Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. Permit Shields

Not applicable.

V. Periodic Monitoring

All periodic monitoring is conducted in accordance with state and federal regulations. See the Specific Requirements Section of the proposed permit renewal / modification for monitoring requirements.

VI. Applicability and Exemptions of Selected Subject Items

See permit application.

VII. Streamlined Requirements

None

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VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

Carbon Monoxide (CO) - A colorless, odorless gas which is an oxide of carbon.

Grandfathered Status - Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Disulfide (H₂S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that

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emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit - Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ - Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) - A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO₂) - An oxide of sulphur.

Title V permit - See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.